

Air Force Civil Engineer Center



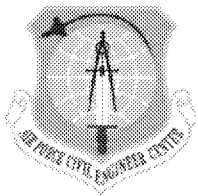
*FORMER
WILLIAMS AIR FORCE BASE*

Site ST012

**Former Liquid Fuel
Storage Area**

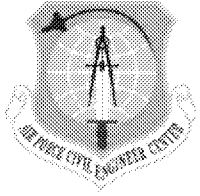
**BCT Conference Call
17 August 2017**

Battle Ready... Built Right!



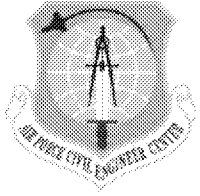
Site ST012 Outline

- **Summary of Activities Since July BCT call**
- **SVE Update**
- **LNAPL Monitoring/Removal Update**
- **Path Forward**
- **Revised Draft Final RD/RAWP Addendum 2 Discussion**



Site ST012 Activities Since July

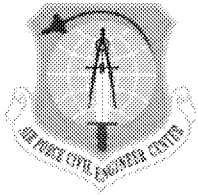
- **Continued SVE operation**
- **Continued LNAPL screening in accessible SEE wells and Phase I characterization wells**
- **Sampled perimeter wells (results not yet available)**



Soil Vapor Extraction System Update

8/17/2017

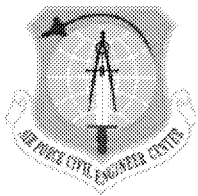
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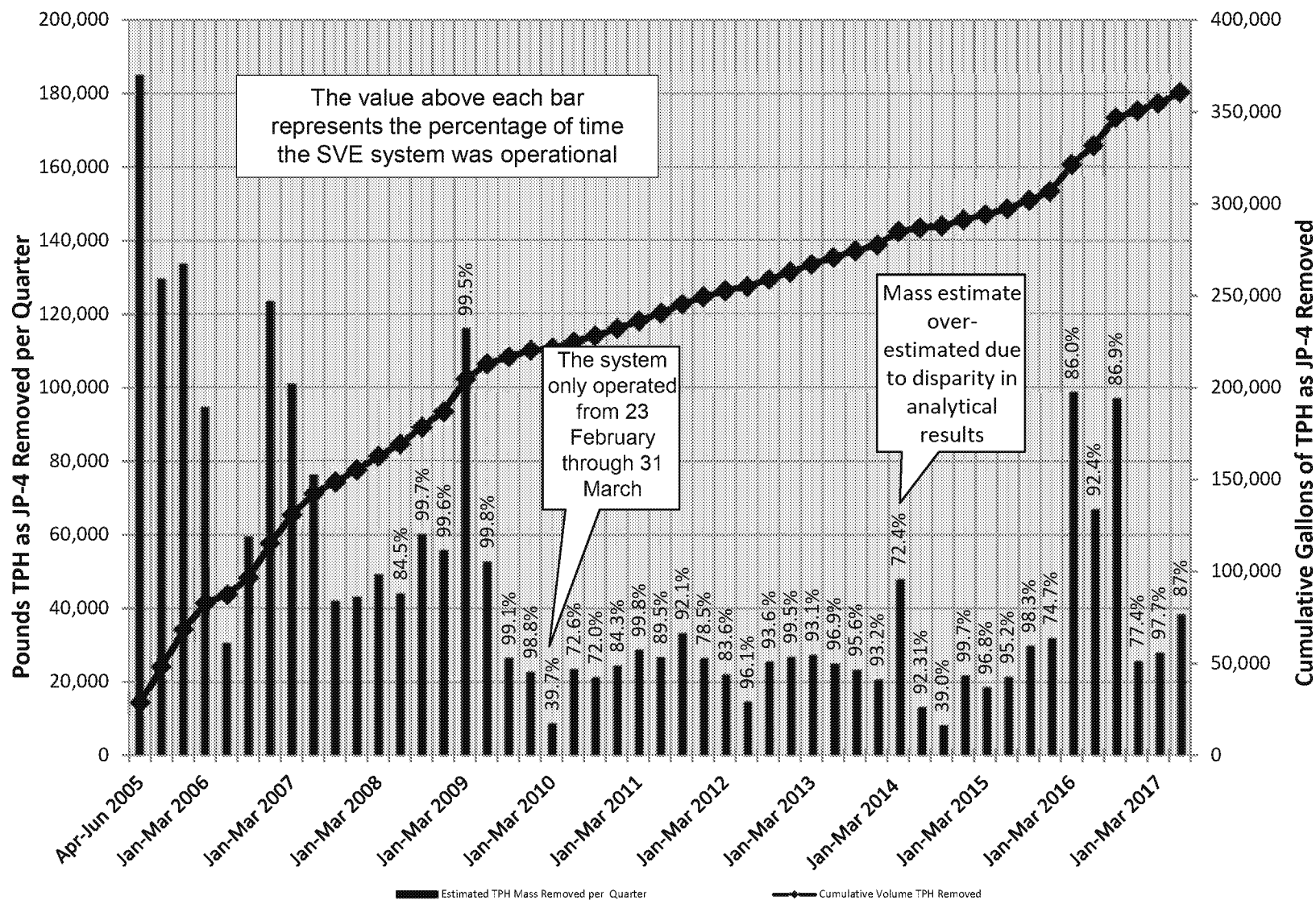
ST012 SVE System Update

- **Apr – Jun 2017**
 - 87.0% operational uptime Thermox; 99.5% operational uptime Flamox
 - Total petroleum hydrocarbon (TPH) removed – 38,267 pounds or 5,825 gallons
 - Temporary shutdown of Thermox in April to repair programmable logic controller

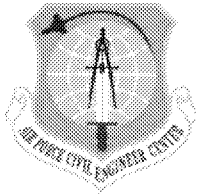




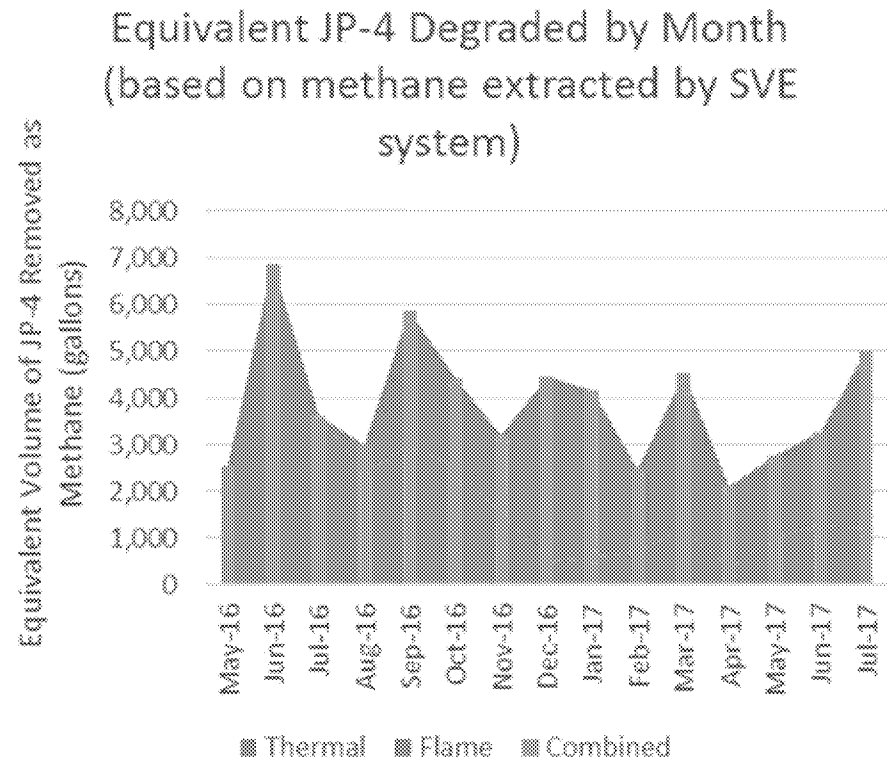
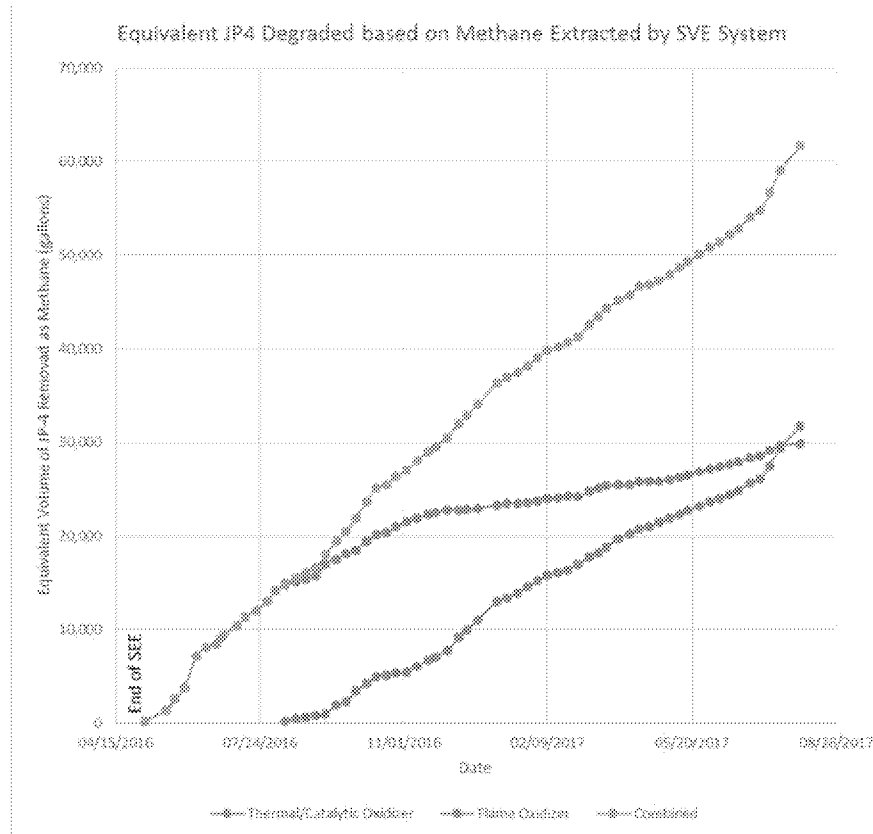
Site ST012 SVE System Performance



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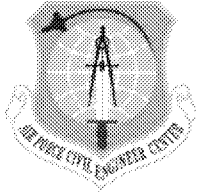


Site ST012 SVE System Equivalent JP-4 Degradation Based on Methane Removed



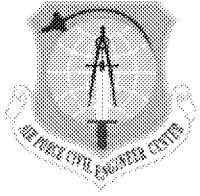
Estimated JP-4 degradation as methane is in addition to JP-4 removal reported for SVE

8/17/2017



Site ST012 SVE System Summary

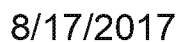
- **TPH removed through Jun 2017 – 360,300 gallons**
- **Mass removal increased slightly in Apr through Jun period compared to Jan through Mar period**
- **Continued significant methane concentrations in several deep wells (> 100% of LEL); an indicator of ongoing methanogenesis of petroleum hydrocarbons**

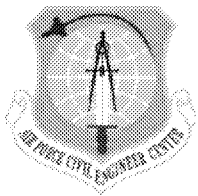


LNAPL Monitoring Update (through 4 Aug)

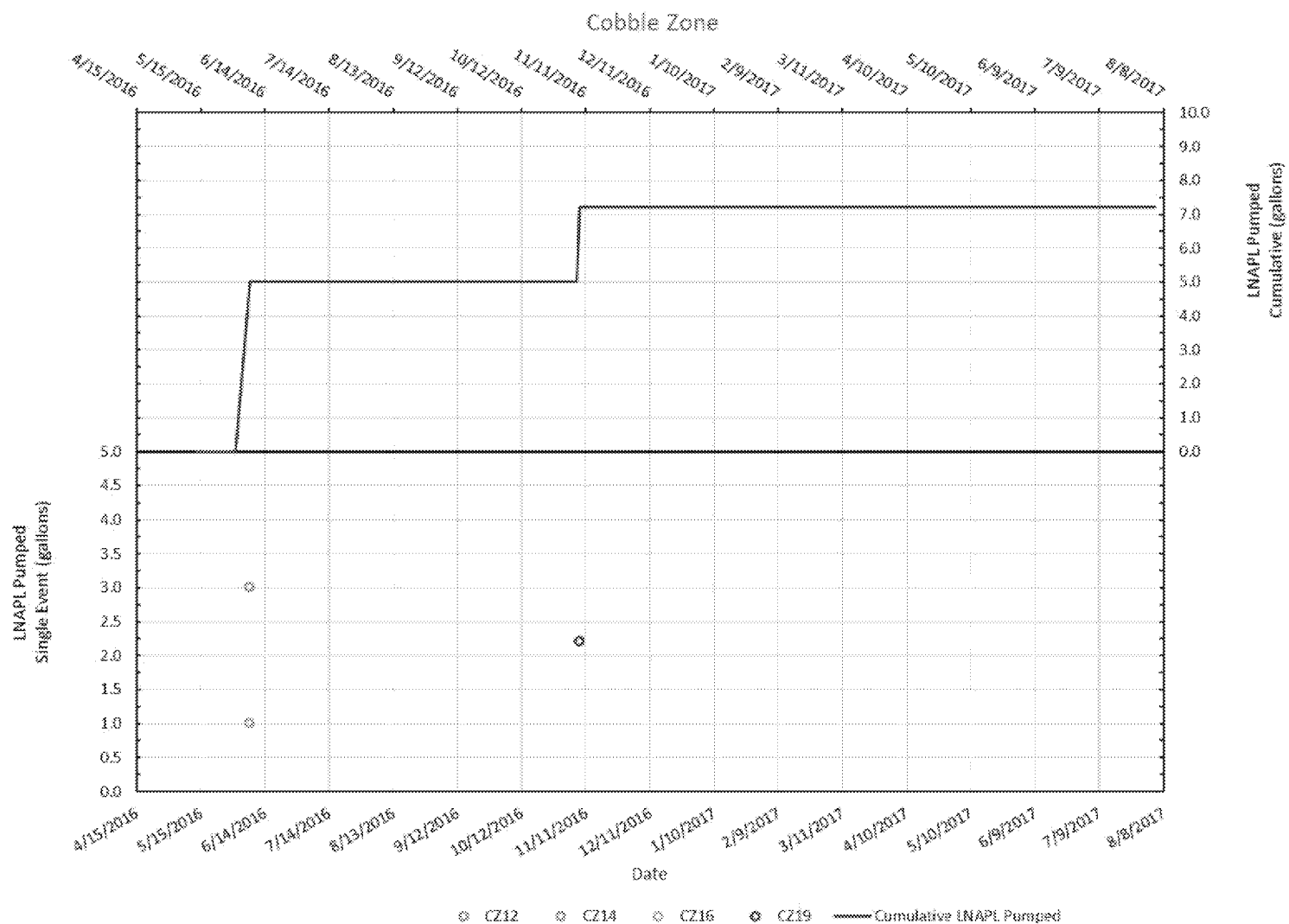
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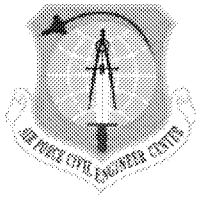




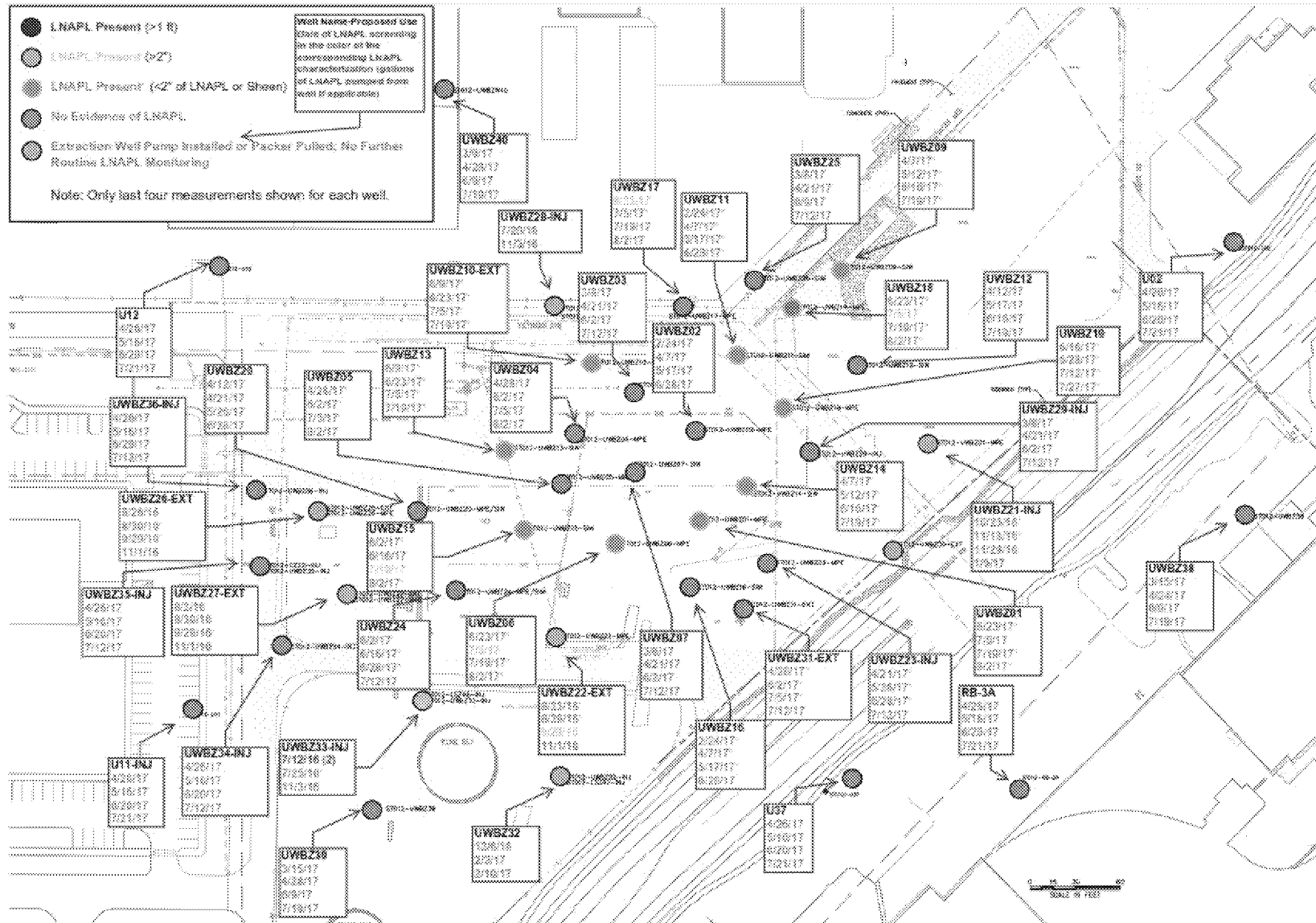
LNAPL Monitoring/Removal Status Cobble Zone



8/17/2017

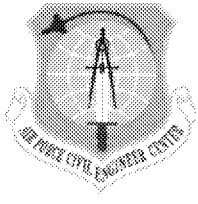


LNAPL Monitoring/Removal Status Upper Water Bearing Zone

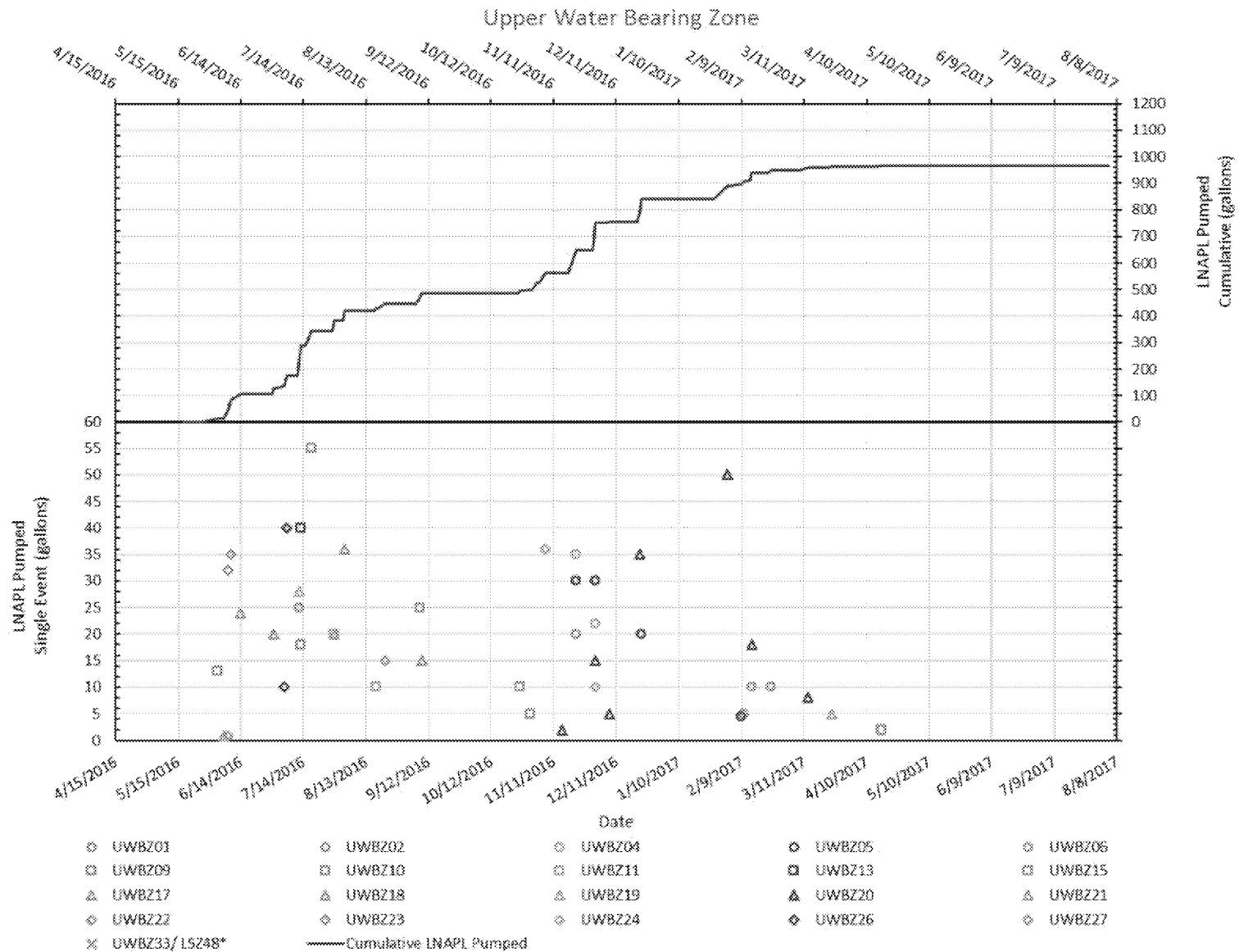


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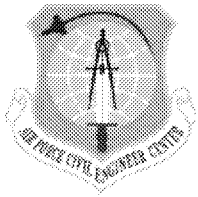


LNAPL Monitoring/Removal Status Upper Water Bearing Zone

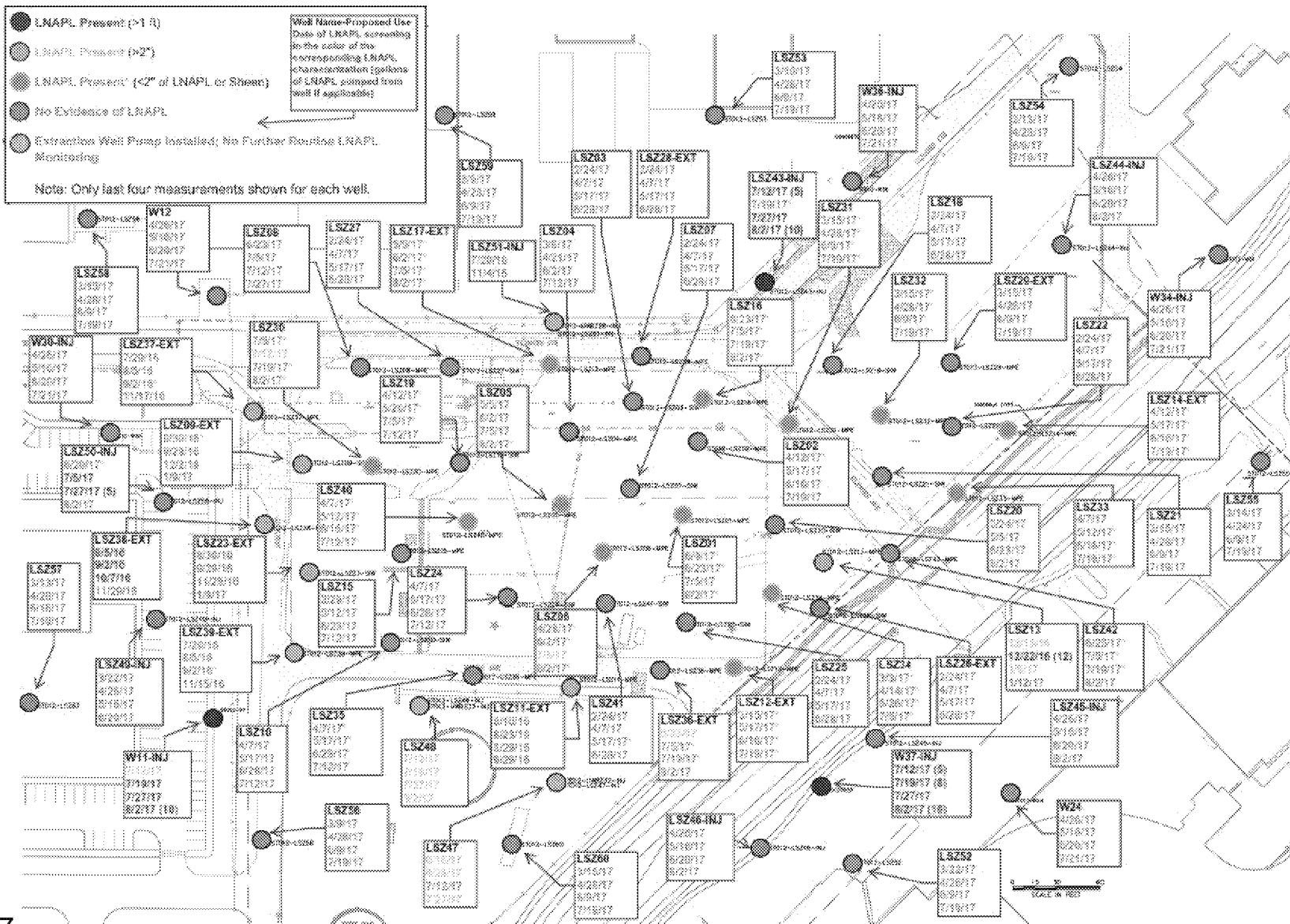


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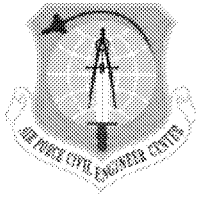


LNAPL Monitoring/Removal Status Lower Saturated Zone



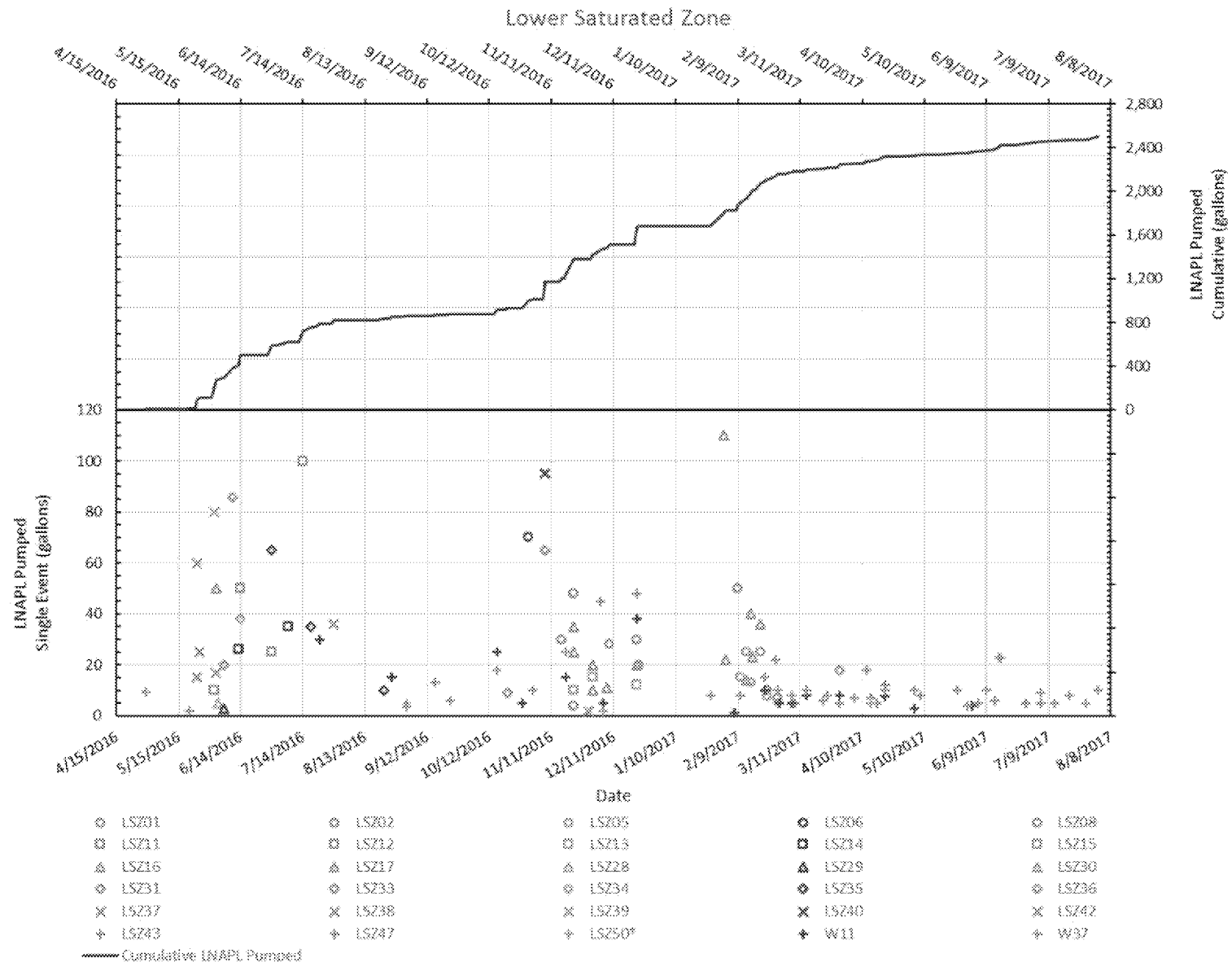
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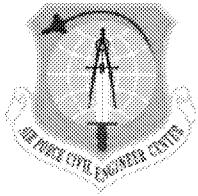
LNAPL Monitoring/Removal Status

Lower Saturated Zone



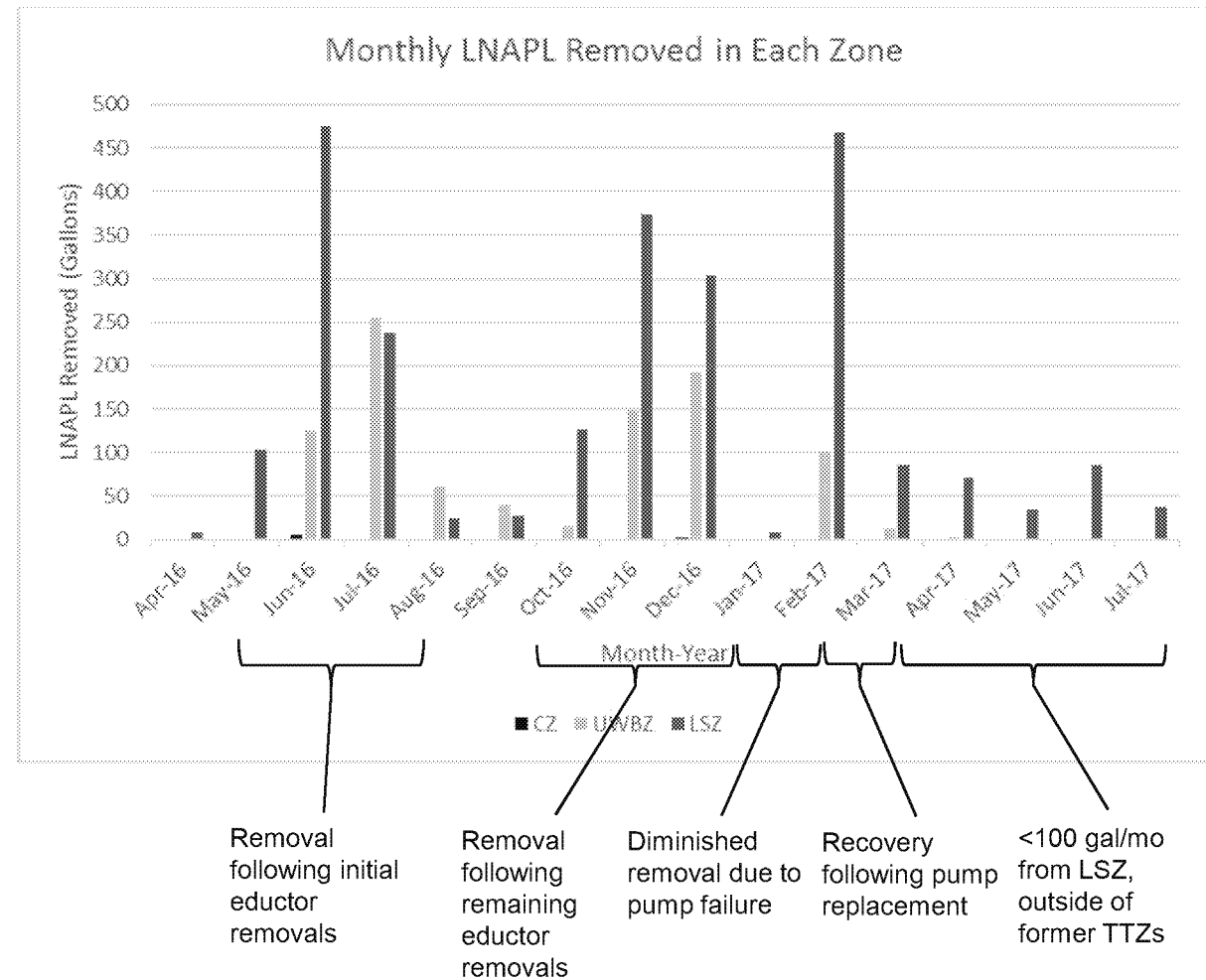
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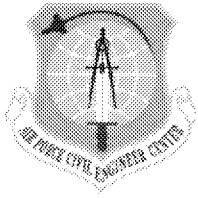
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ST012 LNAPL Monitoring/Removal Summary

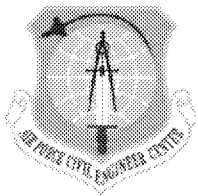
- **CZ** – ~7 gallons of LNAPL removed. None since Nov 2016.
- **UWBZ** - ~950 gallons of LNAPL removed. None since Apr 2017.
- **LSZ** - ~2,500 gallons of LNAPL removed. ~50 gallons removed since Jul 2017 update. All LNAPL removed since Jul 2017 update from wells outside TTZ perimeter (W11,W37, LSZ43, LSZ50).





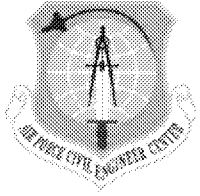
Site ST012 Path Forward

- **Revised Draft Final RD/RAWP**
 - Addendum 2 Submittal** **8 Aug 2017**
- **Baseline Resampling** **Sep 2017**
- **Order Sodium Sulfate** **Sep 2017**
- **Install Injection Components** **Sep-Oct 2017**
- **Start Extraction** **Oct-Nov 2017**
 - Evaluate effect on LNAPL accumulation/recovery
- **Begin Injections** **Dec 2017**

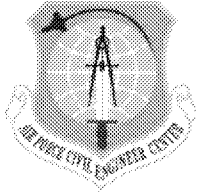


AF/EPA/ADEQ letters/comments

- **EPA Modeling Comments (24 Mar 2017)**
 - Responses submitted 14 Aug 2017
- **ADEQ Mass Estimate Calculations Comments (16 May 2017)**
 - Responses submitted 14 Aug 2017
- **EPA/ADEQ Time of Remediation Estimates (30 May 2017)**
 - Responses submitted 16 Aug 2017
- **EBR Checklist (21 Jun 2017)**
 - Response in preparation

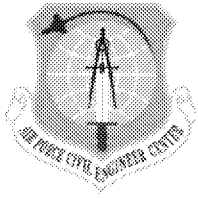


Revised Draft Final RD/RAWP Addendum 2 Discussion



Site ST012 Addendum #2

- **Revised Draft Final RD/RAWP Addendum #2 was submitted on August 8, 2017 and includes:**
 - The revised mass estimate
 - A revised Phase 1 injection extraction plan based on results from the EBR well installation and additional characterization info
 - Updated model results based on the revised EBR extraction/injection well layout
 - A re-baseline sampling event based on delay of EBR implementation
 - The decision matrix table and flow chart
 - Response to EPA and ADEQ comments submitted on 22 Aug 2016 (updated to reflect final changes)
 - Response to ADEQ comments (predominantly on EBR; Received 25 Oct 2016) on Draft Final which were submitted to ADEQ 10 April 2017 (updated to reflect final changes)



Site ST012 Addendum #2

- **The AF views the time period from 2017 through 2020 as critical for the implementation and field evaluation of EBR in specific, and the efficacy of the ST012 remedy in general**
- **To achieve the desired goal of EBR implementation, the AF has considered and incorporated the following into the EBR remedy approach:**
 - **Site data indicate that the groundwater plume is stable**
 - **Multiple lines of evidence for existing biodegradation that is limited by the availability of electron acceptors (e.g., sulfate)**
 - **Benzene groundwater concentrations in the CZ and LSZ should respond quickly to EBR implementation**
 - **The AF will continue to operate the Soil Vapor Extraction system**
 - **Free product will continue to be removed from groundwater monitoring wells to the extent practicable**
 - **The AF phased implementation provided in Addendum #2 has flexibility to maximize enhanced remediation**
 - **If recalcitrant areas of contamination exist three to five years post-EBR implementation, optimized or alternate remedial action, potentially including focused SEE, will be evaluated/implemented**

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Air Force Civil Engineer Center



***2017 BCT
MEETINGS/CONFERENCE
CALLS SCHEDULE
DELIVERABLE TRACKING***

**BCT Conference Call
17 August 2017**

Air Force Civil Engineer Center



ACTION ITEMS

**BCT Conference Call
17 August 2017**